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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/617,770

07/14/2003

Takashi Hamada

740756-2628

4042

22204 7590 04/17/2007  
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EXAMINER

LIN, JAMES

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/617,770

Applicant(s)

HAMADA, TAKASHI

Examiner

Jimmy Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/28/07</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/28/2007 has been entered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support for forming *any metal film* over the thin film or second electrode by resistance heating evaporation method or sputtering method. The present specification only teaches that *a low-resistance metal material* can be formed on the *second electrode* using the claimed methods (see [0037] of the published application 2004/0018796). There is no evidence that the Applicant had possession and had presented written disclosure fairly indicating that the Applicant intended to claim forming of the genus of all possible metal films over the second electrode. Additionally, there is no support for such a film to be formed over *the thin film* of claim 19.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoji et al. (JP-10158638) in view of Hamada et al. (6,114,183).

Shoji discloses a method of manufacturing an organic EL display device, wherein the method comprises forming a first electrode over a substrate, forming an organic EL film on the first electrode, and forming a second electrode (i.e., a thin film) over the organic EL film with an electron beam evaporation method [0013].

Shoji does not explicitly teach forming a thin film transistor (TFT) between the substrate and the first electrode and electrically connecting the TFT to the first electrode. However, Shoji does teach that the EL display device can be produced in a manner as has conventionally been done [0030]. Hamada teaches that patterning the EL layers and providing a TFT 33 connected to the lower electrode 13 to form an active matrix was well known in the art (col. 6, lines 41-43; Fig. 8). An active matrix system with a TFT can provide high quality display images (col. 1, line 44-col. 2, line 9). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have formed an active matrix using a TFT connecting to the first electrode of Shoji. One would have been motivated to do so in order to have increased the display quality of the EL display device. Additionally, one would have been motivated to do so because Hamada teaches that such a method of producing an EL device was well known in the art.

Shoji and Hamada do not explicitly teach that an acceleration voltage of electrons of the electron beam evaporation method is controlled to become the acceleration voltage by which the TFT is not deteriorated with radial rays radiated from an evaporation material for forming the second electrode. However, Shoji does teach that the acceleration voltage should be controlled such that, when an accelerated electron is irradiated on the evaporation material, a radial ray is not substantially radiated from the evaporation material [0013]. The acceleration voltage is controlled to prevent reduction of fluorescence in the organic EL layer [0024]. Although Shoji does not explicitly teach that the acceleration voltage is controlled such that the TFT is not deteriorated with radial rays, the lack of radial rays in the process will prevent any deterioration

of the TFT. Therefore, controlling the acceleration voltage to prevent damage to the organic EL layer such that substantially no radial ray is radiated will necessarily prevent the deterioration of the TFT.

Shoji and Hamada do not explicitly teach that the increase of a sub-threshold coefficient of the TFT is prevented by controlling the acceleration voltage of electrons. However, radial rays from the electron beam evaporation method of an evaporation material appear to cause the shift in the sub-threshold voltage. Because Shoji teaches that a radial ray is not substantially radiated from the evaporation material, radial rays are not present to cause such a shift. Although Shoji does not recognize the problem of the TFT having a shift, such a shift is necessarily prevented due to the lack of radial rays.

Claims 5,6: Shoji teaches that the second electrode can have a thickness in the range of approximately 10 nm to 1  $\mu$ m [0019].

Shoji does not explicitly teach that control is performed such that a time during which the TFT is exposed to radial rays is shortened to avoid deterioration of the TFT when the evaporation material is irradiated with an electron beam. However, Shoji does teach that minimal radial rays are operable in view of the teaching that radial rays are “not *substantially* radiated” [0013] (emphasis added by Examiner). Shoji teaches that the acceleration voltage directly affects the film-forming speed [0026], which inversely affects deposition time. As the acceleration voltage increases, the deposition rate increases while the deposition time decreases. A particular parameter can be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, and the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have varied the acceleration voltage through routine experimentation in order to have found the optimal balance between deposition rate and release of radial rays. Increasing the depositing rate and decreasing deposition time would have necessarily shortened the TFT exposure to radial rays.

Claims 7-12: Shoji teaches that the vapor-depositing material comprises of a metal component and an alkali earth metal [0017].

Claims 13-16: A radial ray is not substantially radiated from the vapor-depositing material [0013].

Claims 17-18: See above discussion regarding the increase of the sub-threshold voltage of the TFT.

Claims 19-20: Shoji teaches that a sealing layer may be formed over the second electrode [0054]. The sealing layer can be a metal film [0055] and can be formed via sputtering [0056].

### *Response to Arguments*

6. Applicant's arguments filed 2/28/2007 have been fully considered but they are not persuasive.

Claims 1-16 as rejected over Hamada '183 and Shoji '638:

The Applicant argues on pg. 9 that Shoji teaches away from the claimed invention. However, this argument is unpersuasive because it is incorrect. Shoji merely teaches a different reason to control the acceleration voltage and the radial rays. The method of Shoji would have necessarily prevented radial rays from deteriorating the TFT. The fact that Applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

The Applicant argues on pg. 9 that the claimed invention is not concerned with preventing radial rays from being radiated. However, the Applicant is directed to claims 13-16, wherein the claims require "wherein radial rays are not substantially radiated from the evaporation material". Thus, the invention of claims 13-16 is concerned with preventing radial rays from being radiated.

The Applicant argues on pg. 9 that claims 1-6 recite radial rays radiated from an evaporation material. However, claims 1-4 do not necessarily require radial rays to be radiated, especially in view of claims 13-16.

The Applicant argues on pg. 9 that Shoji lacks a teaching of radial rays as claimed. However, Shoji teaches that minimal radial rays are operable in view of the teaching that the

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radial rays are "not *substantially* radiated" [0013] (emphasis added by Examiner). Thus, Shoji does teach that radial rays can be present.

The Applicant argues on pg. 10 that Shoji teaches away from the claimed invention since the present invention is not concerned with increasing deposition rate, but instead the Applicant's invention is directed toward reducing thickness of a thin film or second electrode as recited in claims 5-6. However, Shoji teaches that the acceleration voltage directly affects film-forming speed and, thus, is a result-effective variable. A particular parameter can be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, and the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Accordingly, the increase of deposition time would have resulted in a shortened exposure of the TFT. Additionally, Shoji teaches a film thickness range that overlaps with the claimed range, as discussed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



**KEITH HENDRICKS**  
**PRIMARY EXAMINER**